Landscape and art

The gardens, which we hope will help staff unwind as much as patients, were designed by James Hope. The lake, in homage to Monet's "waterlily" garden, has a bridge, an island, walkways, secluded areas, a summer house, and wildfowl. Landscape is theatre: there is a difference, particularly to recovering people, between a static view and a view with life and movement in it. Stocking the lake with wildfowl and fish has been a local initiative, and we are delighted that the health authority has agreed that the area can be open to the public.

The landscaping is as much part of the arts project as the design for live performances of all kinds and the works of art themselves. Art is the other healing aspect of the hospital, complementing the medical. The key pieces of the art collection for stage one are already made—the large tapestry of the island, by Candice Bahuth, made up of panels worked by hospital staff, patients, and community groups (even someone in our office), hangs on a wall of the main stair, and a huge ceramic mural is to be installed on a subsidiary staircase. In time each ward will have its own entrance mural, and the art collection will grow: there are places for another 250 pieces of art, including a sculpture park in the landscape. My hope is that there will eventually be some work in every space in the hospital, including the cleaners' cupboards. And of course the art collection is for the staff as much as anyone else; staff members will be able to choose the works they want in their rooms, rather than having to live with the choice of others. Guy Eades, the full time arts coordinator, is an important member of the hospital staff and works with the doctors, nurses, and administrators. Some £250 000 has been raised so far. The arts project could greatly benefit over the years from patients and their families wishing to express their gratitude to hospital and staff: plant a tree to celebrate a new baby, for instance, or help buy a mobile or painting for the collection.

Sponsorship and generous community involvement have been important elements in the fundraising for the arts project. Leading Leisure sponsored the lake project, Sealink the main mural, Southern Arts the ceramic on the staircase. But no money that would otherwise have gone to a scanner or kidney machine was diverted to the arts programme, which was sponsored from sources that would not otherwise have been involved—such as the Gulbenkian Foundation, which provided money for the project. In parallel with the arts programme appeal there was also a very successful appeal for a scanner; the one fundraising scheme has not inhibited the other.

Hospitals for the future

St Mary's is, to me, a pathfinder hospital for the '90s. Others clearly see it that way too—it has already attracted professional visitors from all over the world. But I also see it as a beginning. Modern hospitals in cities are the largest community buildings we have, and part of the largest industry in Europe. They are usually antiquated, they waste much energy, they have, and will increasingly have, huge staffing problems because of transport and housing that is inadequate, outdated, and depressing. New dimensions must come into play when we reconstitute our city hospitals. They must accommodate themselves to the requirements of technology and biomedicine, to the global requirements of sensible energy use, and to the human requirements of the healing process—which means they must look after their staff as well as their patients. We may need to create a new model on the lines of a hospital town in the middle of our major cities, just as there were once university towns. It would be a multifunctional unit with hospital buildings, educational establishments, housing, commercial facilities, and related services and industries—but all essentially part of the community. This may be where the best future lies. In the same way as I once lay in an NHS bed thinking about hospital design and have incorporated those ideas within St Mary's, I have now seen some of the problems faced by our urban hospitals and know that the formula worked out at St Mary's could help.

1 Ulrich R. View through a window may influence recovery in surgery. *Science* 1984;224:420-1.

Are orthopaedic surgeons really gorillas?

John S Fox, Gordon R Bell, Patrick J Sweeney

Critical comparison between orthopaedic and general surgeons is woefully absent in scientific publications, leading to speculation, innuendo, and myth. This often results in derogatory remarks about one of these two categories. Previous reports in the *BMJ* have lent some credence to the long held traditions and popular myths that the orthopaedic surgeon is a man of enormous build and great strength, if perhaps a little slow[1]; that orthopaedic surgery requires brute force, ignorance, and a perception of pain[2]; and that orthopaedic surgeons are somewhat prone to injury.[3]

An anthropomorphic connection between orthopaedic surgeons and gorillas was implied by the results of a study in the United Kingdom, which showed that orthopaedic surgeons' mean glove size was 7·6 and general surgeons' was 7·4.[1] This study was flawed from a scientific and interpretive aspect. Firstly, the study failed to consider that including female orthopaedic or general surgeons would alter the mean glove size in their sample. Secondly, there was no information on whether orthopaedic and general surgical trainees (residents) were included. Thirdly, there was no data on the glove size of actual gorillas. In addition, the study was not prospective or double blind and did not include a crossover. There was no disclaimer that funds were not received from any interested party. At best, results could only support the contention that orthopaedic surgeons are bigger gorillas than are general surgeons. To correct for these flaws we undertook a randomised double blind study.

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Subjects, methods, and results

An unbiased and totally ethical letter was submitted to the theatre "executive nurse" in major hospitals across the United States. The innermost glove size and the sex of orthopaedic surgeons and residents and of general surgeons and residents were recorded. As an adjunct study glove sizes of locally available gorillas were measured.

Glove sizes were recorded from 483 surgeons—217 orthopaedic and 266 general. In the orthopaedic group there were 97 staff surgeons and 120 residents, including four female staff surgeons and four female

Mean (SD) glove size of male and female staff and resident orthopaedic and general surgeons

Surgeon	Glove size	
	Male	Female
Orthopaedic surgery		
Staff	7·7 (0·4)	6·9 (0·4)
Resident	7·7 (0·4)	6·5 (0·4)
General surgery		
Staff	7·4 (0·4)	6·4 (0·8)
Resident	7·4 (0·5)	6·1 (0·6)

residents. In the general surgical group there were 129 staff surgeons and 137 residents, including nine female staff surgeons and 18 female residents. Glove sizes for men and women were studied and analysed separately. Mean glove sizes for the male staff orthopaedic surgeons and residents were 7·7 (SD 0·4) and 7·7 (0·4), respectively. Those for the female staff orthopaedic surgeons and residents were 6·9 (0·4) and 6·5 (0·4), respectively. Mean glove sizes for the male staff general surgeons and residents were 7·4 (0·4) and 7·4 (0·5), respectively. Those for the female staff general surgeons and residents were 6·4 (0·8) and 6·1 (0·6), respectively (table).

One gorilla in the natural history museum and one from the zoological gardens had a glove size greater than 9·5. (One gorilla was not cooperative and despite many attempts would not allow measurement.)

Comment

Barrett's United Kingdom study reported mean glove sizes of 7·6 (SD 0·4) for orthopaedic surgeons and 7·4 (0·4) for general surgeons with a highly significant ($p<0·001$) correlation.[1] He commented that tightness of fit may have affected his results. He concluded, using standard charts, that orthopaedic surgeons were slightly (2·3 cm) taller than their general surgical colleagues.

Barrett's study failed to state whether the sample was double blind. In our group all surgeons wore masks while operating and were not seen by the study group.

The average male staff orthopaedic surgeon in the United States has a larger glove size than the average British orthopaedic surgeon (7·7 *v* 7·6). These data suggest that either the United Kingdom figures are biased by failure to differentiate subgroups or that orthopaedic surgeons in the United States have work hypertrophy of the hands. There was very close correlation between the mean of 7·4 for the general surgeons in the United States and the corresponding figure of 7·4 for those in the United Kingdom, which may either represent a commonness of ancestral or genetic origin or work atrophy in both countries.

As to differences between surgeons in the United States, it was noteworthy that in the male orthopaedic surgeons both residents and staff had the same mean glove size. This was either a manifestation of a selection process of residents for training programmes or the propensity of orthopaedic residents to mimic their mentors. Such orthopaedic mimicry has not previously been reported, although it is a well known defence mechanism. If orthopaedic staff surgeons selected residents based on a recognition of self, as recognised in immunology, this would explain the similar glove sizes. Male general surgical staff and residents also shared very similar mean glove sizes. As we do not yet have the histocompatibility subtypes for the 483 surgeons we are inclined to favour the hypothesis of self defence rather than a genetic or immunological basis for recognition of self.

On average, female orthopaedic staff surgeons and resident surgeons had a larger glove size than their female general surgical colleagues. In addition, orthopaedic female glove size had a smaller standard deviation than that of their general surgical colleagues. This strongly suggests that female orthopaedic surgeons have a lesser propensity to change their minds. As the sample size is relatively small, however, the remote possibility exists that this may be a statistical artefact. The female general surgery residents' mean glove size of 6·1 was appreciably less than the mean of 7·7 for the male orthopaedic surgeons, suggesting that male orthopaedic surgeons are larger than female general surgical residents, although this may be the subject of a further study.

Objective data for gorillas from our sample is preliminary, although their mean glove size was closer to that of orthopaedic surgeons than to that of general surgeons.

We therefore conclude that orthopaedic surgeons have larger hands than general surgeons, and we favour a work hypertrophy theory. Immunological recognition may be a factor in the selection and survival of surgical residents. Orthopaedic surgeons are slightly closer to gorillas than are general surgeons. Live gorillas' glove size is a difficult variable to measure.

1 Barrett DS. Are orthopaedic surgeons gorillas? *BMJ* 1988;**297**:1638.
2 Brenkel IJ, Pearce M, Gregg PJ. A cracking complication of hemiarthroplasty of the hip. *BMJ* 1986;**293**:1648.
3 Dias JJ, Brenkel IJ, Pordoff SG. Orthopaedic surgery: a health hazard. *BMJ* 1988;**297**:1637-8.

Referee's comments

This paper compares the important anthropometric characteristic of manus span of some human subspecies with that of our distant evolutionary ancestors. It is of much more than passing importance to conclude that this span is clearly sex determined, that differences between races (United States and British) and subspecies but not species exist, and there is strong evidence of immunological selection into the medical subspecialties of orthopaedic and general surgery. It is clearly an important discovery that the gorilla and the particular human primates considered do not differ.

There are, however, several areas of the statistical analysis presented that require attention. In particular, no logistic regression analysis or covariate adjustment has been made for left or right hand dominance, age, and sex of the primates. Indeed, the sex of the gorillas does not seem to have been established. A 33% drop out rate in the gorilla group is a serious drawback. The authors' explanation of non-compliance suggests a certain lack of determination by one of their investigators. A Cox's proportional hazards muddle incorporating censored data is clearly appropriate to properly assess investigator survival time and should be included.

The major fault with the experimental design is the failure to satisfy item nine of the *BMJ* clinical trials statistical checklist. Thus it is clear that an affirmative answer to the question: "Was the potential degree of blindness used?" is not possible. In a truly blind study the authors should not know anything about the results and neither should the reader.

Regretfully, I must therefore turn down this paper on statistical grounds and recommend it for publication.